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ABSTRACT

This document, one of eight in a multi-cultural competency-based vocational/technical curricula series, is on auto body repair. This program is designed to run 40 weeks and cover 7 instructional areas: use of basic repair tools; metal bumping (theory and practice); metal refinishing (theory and practice); panel replacement; glass work; spot welding; and basic frame straightening. A duty-task index lists competencies in each instructional area that the student should be able to perform at the end of the program. For example, in the glass work section, a student should be able to (1) adjust or align windows in doors; (2) remove damaged glass and install replacement; and (3) seal leaks around the windshield and rear window. In section 1, each instructional task area contains a list of performance objectives, evaluation criterion, performance guide, and a list of tasks to be covered. In section 2, the introduction and duty-task index is repeated in English, Spanish, and Laotian. Section 3 lists technical terms concerning auto body repair in English, Spanish, and Laotian. (CT)

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Multi-cultural Competency-based Vocational Curricula

Illinois State Board of Education

Adult, Vocational and Technical Education

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June 1981

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AUTO BODY REPAIR

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Spanish
Laotian

IV. Technical Lexicon:
English
English/Spanish
English/Laotian

ILLINOIS STATE BOARD OF EDUCATION

Department of Adult, Vocational and Technical Education
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Product Abstract

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AUTO BODY REPAIR series contains:

1. Competency-Based Curriculum in VESL.
2. Program Introduction and Outline in English; Laotian; and Spanish.
3. Lexicon of Technical Terms in VESL; English-Laotian; and English-Spanish versions.

16. General Description (continued)

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COMPETENCY-BASED CURRICULUM SERIES

AUTO BODY REPAIR

CAREER DEVELOPMENT CENTER
SCHOOL OF TECHNICAL CAREERS
SOUTHERN ILLINIOS UNIVERSITY
CARBONDALE, ILLINOIS

COMPETENCY-BASED VOCATIONAL/TECHNICAL CURRICULUM SERIES

AUTO BODY REPAIR

MASAKO T. SHIN, CURRICULUM SPECIALIST, STC, SIU-C

The preparation of this multicultural series was aided financially through funding agreements with the Illinois State Board of Education/Department of Adult, Vocational and Technical Education.

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June 1981

ARDEN L. PRATT, DEAN
E. HOLLIS MERRITT, ASST. DEAN
LARRY HEPBURN, CENTER DIRECTOR

OUR GOAL

TO ACHIEVE THE MAXIMUM IN THE MINIMUM TIME

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INTRODUCTION

An auto body repair specialist needs a knowledge of automobile construction and a certain degree of manual dexterity.

There is a great deal of diversity in the responsibilities of the auto body repair specialist. In the larger auto body shop, the repair specialist is generally assigned to a specialized area of the repair work. However, in the smaller shop, one may be required to perform satisfactorily in several different phases of repair jobs, ranging from complete body rebuilding to frame straightening. Therefore, a good auto body repair specialist should have broad training even though he or she may specialize at some point. He or she also must appreciate quality workmanship because any poor workmanship is highly visible.

Because of the nature and demands of this trade, there are great job opportunities for well-trained, skilled auto body repair specialists. Since earnings depend on the worker's skill and efficiency, an auto body repair specialist is generally paid on a commission basis and may enjoy a profitable trade if he or she is a skilled and motivated worker.

The work environment for an auto body repair specialist is frequently contaminated with dust and paint spray. Therefore, a person who is allergic to paint fumes and dust associated with this trade should not be admitted to the program.

The training period for auto body repair is 40 weeks, and the program provides training in the following areas: use of

basic repair tools; metal bumping (theory and practice); metal refinishing (theory and practice); panel replacement; glass work; spot welding; and some basic frame straightening. The class meets 2 hours each day in related education or G.E.D. classes and 6 hours each day in the auto body shop 5 days a week.

Upon successful completion of the training program, the student will be ready and qualified to do a repair job with some supervision. With 2 to 3 years of "on-the-job" experience, the program graduate should become a full-fledged auto body repair specialist.

AUTO BODY REPAIR: DUTY-TASK INDEX

I. ESTIMATING

1. Estimate the cost of repairs.

II. METALWORK AND WELDING

1. Fill and smooth the depressed areas with body filler.
2. Pick, file and finish metal.
3. Weld frames or frame horns.
4. Shrink damaged metal areas.
5. Weld vehicle body parts.

III. METAL REFINISHING

1. Apply the corrosion materials.
2. Remove paint and rust.
3. Apply primer surfacer.
4. Clean and prepare the repaired surface for painting.
5. Mask sections and parts.
6. Paint surface.
7. Finish the painted surface.

IV. BODY AND FRAME ALIGNMENT

1. Align hood.
2. Remove and install doors.
3. Remove and install fenders.
4. Remove and install weld-in panel.
5. Remove and replace bumpers.

V. GLASS WORK

1. Adjust or align windows in doors.
2. Remove damaged glass and install replacement.
3. Seal leaks around the windshield and rear window.

VI. BASIC FRAME STRAIGHTENING

1. Straighten, repair and align body and frame. (Limited hands-on experience)
2. Straighten deformed body sheet metal.

VII. MECHANICAL REPAIR AND ALIGNMENT

1. Align headlamps.

VIII. TRIM AND ACCESSORY WORK

1. Replace locks and latches.
2. Remove and replace grilles.
3. Remove and replace seat and shoulder belts.
4. Repair power window control units.
5. Repair or replace window raising and lowering mechanism.
6. Replace molding and hardware.

DUTY: ESTIMATING

TASK: Estimate the cost of repairs.

Performance Objectives:

Given a damaged vehicle requiring a cost estimate, the student will estimate the cost of repairs.

Evaluation Criteria:

The student will make a cost estimate on labor and parts for the repairs. The student's cost estimate must be a plus/minus 5% of the instructor's estimate.

Performance Guide:

1. Secure a clip board and a proper estimating sheet.
2. Select proper estimating price and parts manuals.
3. Make thorough inspection of the damage.
4. List the damaged parts to be replaced or straightened in their proper sequence.
5. Price parts and labor from the estimating manuals.
6. Estimate amount of paint and materials in dollars.
7. Total parts and labor costs: Add sales tax to parts cost.
8. Return the estimate to the instructor for evaluation.

DUTY: METALWORK AND WELDING

TASK: Fill and smooth the depressed areas with body filler.

Performance Objectives:

Given a vehicle with roughed out panels, the student will fill and smooth the depressed areas in preparation for primer surfacer.

Evaluation Criteria:

The student will grind the depressed area, apply body filler, and smooth to the original contour.

Performance Guide:

1. Inspect roughed out panels.
2. Select grinder and disc.
3. Secure safety glasses.
4. Grind the panels.
5. Select the proper tools to work body filler.
6. Determine the amount of body filler required.
7. Mix filler to conform with contour of panels.
8. Apply body filler to conform with contour of the panels.
9. Check for hardness.
10. Use rasp or cheese grader file to rough cut.
11. Use necessary sanding equipment to smooth and feather-edge.
12. Have instructor check for smoothness.

DUTY: METALWORK AND WELDING

TASK: Pick, file and finish metal.

Performance Objectives:

Given a vehicle with a damaged area, the student will straighten the damage by using pick-and-file method and finish the metal in preparation for primer surfacer.

Evaluation Criteria:

The student's work must be smooth to the touch and conform to the original contour of the body.

Performance Guide:

1. Inspect the vehicle and panel damage.
2. Select proper tools.
3. Determine high or low areas in surface.
4. Use a pick hammer to raise low areas.
5. Use a metal file to locate high spots and imperfections made by pick hammer.
6. Select proper disc grinder and grind out file marks.
7. Glaze with body filler or putty as necessary.
8. Feather-edge paint and finish in preparation for primer surfacer.

DUTY: METALWORK AND WELDING

TASK: Weld frames or frame horns.

Performance Objectives:

Given a vehicle with a damaged frame section or frame horn requiring a welded replacement part, the student will arc-weld and align the frame.

Evaluation Criteria:

The student will restore the vehicle to the original dimensions by welding all the cracks and/or tears and aligning frame to the manufacturer's specification.

Performance Guide:

1. Inspect the frame damage.
2. Select tools and equipment needed.
3. Remove sheet metal, if necessary for access.
4. Weld any cracks or tears; align the frame to the manufacturer's specifications.
5. Remove by cutting damaged frame horn or frame section.
6. Cut replacement piece to fit.
7. Grind and clean areas to be welded.
8. Clamp the replacement piece in place.
9. Weld the piece in place using correct equipment and technique.
10. Replace sheet metal removed for access.
11. Refinish frame section repair.
12. Align the front end.

DUTY: METALWORK AND WELDING

TASK: Shrink damaged metal areas.

Performance Objectives:

Given a stretched panel, the student will shrink the stretched area to the original contour of the metal.

Evaluation Criteria:

The student will complete the task, according to acceptable standards, within a length of time considered reasonable by the instructor.

Performance Guide:

1. Inspect the damage.
2. Select the tools and equipment necessary.
3. Choose a proper method for the job:
   a.
   b.
   c.
4. Shrink the stretched area, using the method selected.
5. Check for correct contour and alignment.
6. Have the instructor evaluate the work.

DUTY: METALWORK AND WELDING

TASK: Weld vehicle body parts.

Performance Objectives:

Given a vehicle requiring body panel installation, i.e., rocker panel, roof panel, quarter panel, etc., the student will weld the panel to the adjacent parts.

Evaluation Criteria:

The student's work must be rated acceptable by the instructor on the following checkpoints:

a. Aligned the replacement panel properly.
b. Spaced the spot-welds to the adjacent panel one inch apart.
c. Used the proper welding materials for strength.
d. Filed and finished the joints properly.
e. Restored the original contour of the body.

Performance Guide:

1. Inspect vehicle to determine the tools and equipment necessary for welding vehicle body parts.
2. Obtain proper tools, welding equipment and welding material.
3. Align adjacent parts to fit new panel tightly.
4. Weld panel in place at required locations.

DUTY: METAL REFINISHING

TASK: Apply the corrosion materials.

Performance Objectives:

Given a vehicle panel requiring corrosion control, the student will apply a metal conditioner.

Evaluation Criteria:

The student's performance must be rated acceptable by the instructor on all the checkpoints listed below:

a. Used rubber gloves and goggles for protection.
b. Mixed the conditioner properly.
c. Scrubbed area with appropriate materials.
d. Wiped conditioners dry while the area was still wet, using a clean dry cloth.
e. Allowed a proper drying time.

Performance Guide:

1. Inspect the rusted area to be treated.
2. Procure a metal conditioner.
3. Use rubber gloves and goggles.
4. Dilute the metal conditioner according to manufacturer's specifications.
5. Apply the conditioner with brush or sponge.
6. Scrub the area with steel wool, sandpaper or stiff brush.
7. Wipe conditioners dry while the area is still wet, using a clean dry cloth.
8. Allow to dry at least 10 minutes before applying primer surfacer.

DUTY: METAL REFINISHING

TASK: Remove paint and rust.

Performance Objectives:

Given a vehicle panel requiring paint and rust removal, the student will remove old paint and rust to expose the bare clean metal.

Evaluation Criteria:

The student will complete the task to the instructor's satisfaction within a length of time considered reasonable.

Performance Guide:

1. Inspect the work requirement.
2. Select a proper sandpaper and grinder for the job.
3. Obtain the necessary safety equipment for grinding.
4. Use a sandblaster or grinder to remove the paint and rust.

DUTY: METAL REFINISHING

TASK: Apply primer surfacer.

Performance Objectives:

Given a vehicle requiring the application of primer surfacer coats, the student will spray the vehicle with primer.

Evaluation Criteria:

The student will spray as many coats as necessary, filling all scratches and small imperfections.

Performance Guide:

1. Select necessary equipment and materials.
2. Clean, feather-edge, and sand.
3. Apply glazing as required.
4. Mix or reduce the primer properly.
5. Set for proper air pressure.
6. Use proper spraying techniques.
7. Apply as many coats as required to fill all the scratches and small imperfections.

DUTY: METAL REFINISHING

TASK: Clean and prepare the repaired surface for painting.

Performance Objectives:

Given a vehicle with a primed-in area, the student will clean and prepare the surface for painting.

Evaluation Criteria:

The student will clean and prepare the surface for painting. The surface must be free of all foreign material.

Performance Guide:

1. Select proper tools and necessary materials.
2. Remove all dust and dirt on and around the repaired surface.
3. Remove all foreign material from the surface: i.e., wax, road film, tar, etc.
4. Sand as required.
5. Clean surface with a final wash solvent.
6. Put mixed paint into the spray gun.
7. Tack the surface free of dust and dirt with a tack rag.

DUTY: METAL REFINISHING

TASK: Mask sections and parts.

Performance Objectives:

Given a vehicle requiring masking, the student will mask the required area.

Evaluation Criteria:

The student will finish masking the required area within plus/minus 10% of the time limit set by the instructor.

Performance Guide:

1. Clean and dry the area to be masked.
2. Select the tape.
3. Select the paper.
4. Apply the tape and paper to the area requiring a cover.

DUTY: METAL REFINISHING

TASK: Paint surface.

Performance Objectives:

Given a vehicle prepared for painting, the student will paint the panel.

Evaluation Criteria:

The student will paint the panel with as many coats as are required to match the color and gloss, with no orange peel, runs or sand scratches.

Performance Guide:

1. Inspect the area to be refinished.
2. Select the type and amount of paint needed.
3. Mix and prepare the paint:
   a. Strain the paint into a cup.
   b. Select a proper thinner or reducer.
   c. Reduce the paint.
   d. Add any additives necessary for the specified paint job: e.g., silicone additive, retarder, etc.
4. Set for proper air pressure.
5. Adjust for a proper pattern and fluid control.
6. Apply as many coats as are required, allowing a drying time between the coats.

DUTY: METAL REFINISHING

TASK: Finish the painted surface.

Performance Objectives:

Given a vehicle panel refinished with acrylic lacquer, the student will clean, color-sand, and compound to match the gloss of the adjacent panels.

Evaluation Criteria:

The student will finish the painted surface matching the gloss to that of adjacent panels and polish to protect the finish.

Performance Guide:

1. Inspect the panel refinished in acrylic lacquer.
2. Determine the equipment and necessary materials to finish the painted surface.
3. Color-sand with the proper sandpaper.
4. Remove dirt, grit and other contaminants from the area to be compounded.
5. Compound the area to match the gloss of the adjacent panels.
6. Polish or wax the surface to remove swirl marks and protect the finish.

DUTY: BODY AND FRAME ALIGNMENT

TASK: Align hood.

Performance Objectives:

Given a vehicle with a misaligned hood, the student will adjust the hood at adjustment points to insure alignment with adjacent panels.

Evaluation Criteria:

The student will make necessary adjustments and align the hood with adjacent panels with no more than a 5/32" gap between the panels.

Performance Guide:

1. Inspect the misaligned hood.
2. Locate the adjustment points, if provided.
3. Select the proper tools.
4. Remove the hood lock striker mechanism.
5. Make the necessary adjustments to secure alignment with adjacent panels.
6. Reinstall the hood lock mechanism and align with new hood alignment.

DUTY: BODY AND FRAME ALIGNMENT

TASK: Remove and install doors.

Performance Objectives:

Given a vehicle requiring door replacement, the student will remove the damaged door and install a new replacement.

Evaluation Criteria:

The student will install a new door and align the door with adjacent panels with no more than 5/32" gap between the door and the panels.

Performance Guide:

1. Inspect the damaged door to determine proper selection of tools.
2. Remove inside hardware and trim from the damaged door.
3. Remove the door glass, regulators and guides.
4. Remove all door lock mechanisms.
5. Remove the outside door handle and lock cylinder.
6. Remove all weather stripping.
7. Remove the damaged door from the vehicle.
8. Prepare and refinish: jam on the new door with matching color; allow to dry.
9. Install the new door on the vehicle and align.
10. Install all hardware, weather strippings, trim, and accessories on the new door shell.

DUTY: BODY AND FRAME ALIGNMENT

TASK: Remove and install fenders.

Performance Objectives:

Given a vehicle requiring fender replacement, the student will remove, replace and align the replacement fender, according to its original appearance.*

Evaluation Criteria:

The student will remove the damaged fender and install the replacement, according to its original appearance, with no more than a 5/32" gap between the panels.

Performance Guide:

1. Inspect the damage. Check for related damages.
2. Select hand tools. Decide on the method for replacing metal.
3. Remove the damaged fender.
4. Check for hidden damages.
5. Straighten and align the inner fender of skirt.
6. Transfer the moldings and accessories.
7. Install the replacement fender.
8. Adjust and align the fender.

*A new fender should be painted around the edges with a matching color before installation; while the paint is drying, remove the damaged door.

DUTY: BODY AND FRAME ALIGNMENT

TASK: Remove and install weld-in panel.

Performance Objectives:

Given a vehicle requiring weld-in panel installation, the student will remove the damaged panel and install replacement.

Evaluation Criteria:

The student will remove the damaged panel and install and align the replacement panel to restore the original body contour.

Performance Guide:

1. Inspect the panel for apparent and hidden damages.
2. Select the tools to pull or push the damaged panel to as near original alignment as possible.
3. Select the proper cutting tools: air chisel, torch, power saw.
4. Remove the upholstery and trim as needed.
5. Secure safety goggles and gloves.
6. Remove the damaged panel using the proper cutting method.
7. Trim the rough edges.
8. Attach the replacement panel with clamps.
9. Align the panel to adjacent body parts.
10. Grind and clean areas to be welded.
11. Spot-weld as necessary.
12. Fill any original or new repair seams with plastic filler and level.

DUTY: BODY AND FRAME ALIGNMENT

TASK: Remove and replace bumpers

Performance Objectives:

Given a vehicle with damaged front or rear bumper, the student will remove and install replacement.

Evaluation Criteria:

The student will remove the damaged bumper and install replacement to the original appearance.

Performance Guide:

1. Inspect the damaged bumper.
2. Select the proper tools.
3. Remove the damaged bumper.
4. Straighten or replace brackets as needed.
5. Install replacement bumper: new or rechromed.
6. Align and adjust to body lines.

DUTY: GLASS WORK

TASK: Adjust or align windows in doors.

Performance Objectives:

Given a vehicle door glass requiring adjustment or alignment, adjust or align window.

Evaluation Criteria:

The student will adjust or align the window glass to prevent any water leaks, wind noise or rattles, to the instructor's satisfaction.

Performance Guide:

1. Select proper tools for the job.
2. Remove the inside door-hardware and trim.
3. Locate the adjustment points.
4. Align the window to prevent wind noise, water leaks, and rattle.
5. Test for water leaks.
6. Replace inside door hardware and trim.

DUTY: GLASS WORK

TASK: Remove damaged glass and install replacement.

Performance Objectives:

Given a vehicle with broken glass, the student will remove the broken glass and install the replacement. The replacement glass must equal the original in function and appearance.

Evaluation Criteria:

The student will complete the task to the instructor's satisfaction within a length of time considered reasonable.

Performance Guide:

1. Inspect the damage.
2. Select the proper tools and necessary equipment.
3. Remove the broken glass from inside the vehicle.
4. Remove the inside trim as necessary.
5. Remove the access panels as required.
6. Remove the broken glass.
7. Remove the window regulator and tracks as necessary.
8. Repair or replace damaged channels if necessary.
9. Install the replacement glass and attach to regulator and tracks.
10. Check for ease of operation and correct alignment. Lubricate as needed.
11. Replace the removed access panels and upholstery.

DUTY: GLASS WORK

TASK: Seal leaks around the windshield and rear window.

Performance Objectives:

Given a vehicle with a leaky seal around the windshield or rear window, the student will seal as needed.

Evaluation Criteria:

The student will seal around the windshield or rear window as required. The finished work will not leak under water pressure.

Performance Guide:

1. Use water to determine the exact place of leak.
2. Select the proper tools and materials.
3. Remove the reveal molding if necessary.
4. Seal as required.
5. Check by water test.
   a. The water test should always begin at the BOTTOM of the unit being tested.
   b. The water hose is then moved up the unit very slowly; a gentle stream of water should be used, testing only one section at a time.
   c. When making a water test, have a helper check from the inside and mark any places where even the slightest dampness comes through.
6. Replace the molding.
7. Clean and remove excess sealers.

DUTY: BASIC FRAME STRAIGHTENING

TASK: Straighten, repair and align body and frame. (Limited hands-on experience)

Performance Objectives:

Given a vehicle with body and frame damage, the student will straighten, align and repair to original dimensions.

Evaluation Criteria:

The student will measure, repair and align to its original dimensions, according to the manufacturer's specifications.

Performance Guide:

1. Inspect the damage.
2. Make the necessary measurements to determine the extent of the damage to the body and frame.
3. Select proper tools, measuring device and equipment.
4. Make the necessary tie-downs and hook-ups.
5. Straighten the body and frame, and align to the manufacturer's specifications.

DUTY: BASIC FRAME STRAIGHTENING

TASK: Straighten deformed body sheet metal.

Performance Objectives:

Given a vehicle with deformed sheet metal, the student will straighten and align the panels.

Evaluation Criteria:

The student will straighten and align deformed sheet metal to the original shape, with all high and low spots removed.

Performance Guide:

1. Inspect the damages.
2. Select the tools.
3. Remove the parts as necessary for access to the damaged area.
4. Pull or bump out folds, creases and dents.
5. Weld torn metal as necessary.
6. Shrink metal if necessary.
7. Line up beads, flanges, and openings as needed.
8. Check for high and low spots with body file.
9. Replace the removed parts as needed.

DUTY: MECHANICAL REPAIR AND ALIGNMENT

TASK: Align headlamps.

Performance Objectives:

Given a vehicle requiring headlamp alignment, the student will aim headlamps to meet safety standards.

Evaluation Criteria:

The student will complete the necessary alignment on the headlamp alignment within a length of time considered reasonable by the instructor.

Performance Guide:

1. Inspect the vehicle for sagging springs, car riding height, tire pressure, clean headlight lenses, etc.
2. Select the necessary tools.
3. Remove the headlamp doors, if necessary, for access to the adjustment screws.
4. Adjust the headlamp to a proper aim,using necessary headlight aiming equipment.
5. Replace the headlamp doors.

DUTY: TRIM AND ACCESSORY WORK

TASK: Replace locks and latches.

Performance Objectives:

Given a vehicle requiring replacement of a latch-lock mechanism, the student will remove the damaged mechanism and install a new unit.

Evaluation Criteria:

The student will complete the task and secure a proper operation of the latch-lock mechanism within a length of time considered reasonable by the instructor.

Performance Guide:

1. Select the necessary tools.
2. Remove trim and upholstery, if necessary, to gain access to the latch-lock mechanism.
3. Disconnect the actuating arms and remove the latch-lock mechanism.
4. Install the replacement latch-lock mechanism.
5. Adjust the door lock striker mechanism, if necessary.
6. Make an operational check on mechanisms.
7. Install the removed trim and upholstery.

DUTY: TRIM AND ACCESSORY WORK

TASK: Remove and replace grilles.

Performance Objectives:

Given a vehicle with grille damage, the student will remove and replace a grille.

Evaluation Criteria:

The student will remove the damaged grille and install a replacement conforming to the original appearance.

Performance Guide:

1. Inspect the damaged grille.
2. Select the proper tools.
3. Remove the damaged grille.
4. Straighten necessary brackets or mountings.
5. Install the grille.
6. Align for fit.

DUTY: TRIM AND ACCESSORY WORK

TASK: Remove and replace seat belts and shoulder harnesses.

Performance Objectives:

Given a vehicle requiring a seat belt and shoulder harness replacement, the student will remove defective or worn belts and harnesses and replace them with new units.

Evaluation Criteria:

The student will complete the task to meet the instructor's approval within a length of time considered reasonable. Replacement belts must meet or exceed the standard of the original installation.

Performance Guide:

1. Inspect the seat belts and shoulder harnesses.
2. Select the proper tools.
3. Remove the retainer bolts from the belts and shoulder harnesses, and remove worn or defective belts.
4. Install replacement belts.

DUTY: TRIM AND ACCESSORY WORK

TASK: Repair power window control units.

Performance Objectives:

Given a vehicle with a faulty power window, the student will remove upholstery, troubleshoot, and make necessary repair or replacement.

Evaluation Criteria:

The student will complete the task within a length of time considered reasonable by the instructor. The repaired window unit must operate as the original.

Performance Guide:

1. Inspect the vehicle to determine the necessary tools and equipment.
2. Remove the door upholstery and panels for access.
3. Troubleshoot the activating switch.
4. Troubleshoot the power window control motor.
5. Make necessary repair or replacement of switch, motor and regulator.
6. Check for correct operation.
7. Install the removed door upholstery and panels.

DUTY: TRIM AND ACCESSORY WORK

TASK: Repair or replace window raising and lowering mechanism.

Performance Objectives:

Given a vehicle with a damaged or broken window mechanism, the student will repair or replace the window mechanism as necessary.

Evaluation Criteria:

The repaired window mechanism must raise and lower smoothly.

Performance Guide:

1. Inspect the damaged areas.
2. Select the proper tools.
3. Remove the door trim and hardware for access.
4. Repair or replace the damaged parts.
5. Insure proper alignment before replacing the door trim.
6. Have the instructor check for the proper operation of the window mechanism.
7. Replace the removed door trim.

DUTY: TRIM AND ACCESSORY WORK

TASK: Replace molding and hardware.

Performance Objectives:

Given a vehicle requiring molding for hardware replacement, the student will remove and replace the damaged parts.

Evaluation Criteria:

The student will complete the task to the instructor's satisfaction within a length of time considered reasonable. The replacement must conform to the original appearance and function.

Performance Guide:

1. Inspect the vehicle to determine the necessary tools.
2. Remove the hardware and upholstery for access if necessary.
3. Locate the clips and fasteners securing the molding.
4. Remove the damaged molding.
5. Attach clips and fasteners, as required, to the replacement molding.
6. Install the replacement molding.
7. Install the removed hardware and upholstery.

Introduction and Outline:

English
Spanish
Laotian

INTRODUCTION To AUTO BODY REPAIR

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MASAKO T. SHIN, CURRICULUM SPECIALIST, STC, SIU-C

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ARDEN L. PRATT, DEAN
E. HOLLIS MERRITT, ASST. DEAN
LARRY HEPBURN, CENTER DIRECTOR

INTRODUCTION

An auto body repair specialist needs a knowledge of automobile construction and a certain degree of manual dexterity.

There is a great deal of diversity in the responsibilities of the auto body repair specialist. In the larger auto body shop, the repair specialist is generally assigned to a specialized area of the repair work. However, in the small shop, one may be required to perform satisfactorily in several different phases of repair jobs, ranging from complete body rebuilding to frame straightening. Therefore, a good auto body repair specialist should have broad training even though he or she may specialize at some point. He or she also must appreciate quality workmanship because any poor workmanship is highly visible.

Because of the nature and demands of this trade, there are great job opportunities for well-trained, skilled auto body repair specialists. Since earnings depend on the worker's skill and efficiency, an auto body repair specialist is generally paid on a commission basis and may enjoy a profitable trade if he or she is a skilled and motivated worker.

The work environment for an auto body repair specialist is frequently contaminated with dust and paint spray. Therefore, a person who is allergic to paint fumes and dust associated with this trade should not be admitted to the program.

The training period for auto body repair is 40 weeks, and

the program provides training in the following areas: use of basic repair tools; metal bumping (theory and practice); metal refinishing (theory and practice); panel replacement; glass work; spot welding; and some basic frame straightening. The class meets 2 hours each day in related education or G.E.D. classes and 6 hours each day in the auto body shop 5 days a week.

Upon successful completion of the training program, the student will be ready and qualified to do a repair job with some supervision. With 2 to 3 years of "on-the-job" experience, the program graduate should become a full-fledged auto body repair specialist

AUTO BODY REPAIR: DUTY-TASK INDEX

I. ESTIMATING

1. Estimate the cost of repairs.

II. METALWORK AND WELDING

1. Fill and smooth the depressed areas with body filler.
2. Pick, file and finish metal.
3. Weld frames or frame horns.
4. Shrink damaged metal areas.
5. Weld vehicle body parts.

III. METAL REFINISHING

1. Apply the corrosion materials.
2. Remove paint and rust.
3. Apply primer surfacer.
4. Clean and prepare the repaired surface for painting.
5. Mask sections and parts.
6. Paint surface.
7. Finish the painted surface.

IV. BODY AND FRAME ALIGNMENT

1. Align hood.
2. Remove and install doors.
3. Remove and install fenders.
4. Remove and install weld-in panel.
5. Remove and replace bumpers.

V. GLASS WORK

1. Adjust or align windows in doors.
2. Remove damaged glass and install replacement.
3. Seal leaks around the windshield and rear window.

VI. BASIC FRAME STRAIGHTENING

1. Straighten, repair and align body and frame. (Limited hands-on experience)
2. Straighten deformed body sheet metal.

VII. MECHANICAL REPAIR AND ALIGNMENT

1. Align headlamps.

VIII. TRIM AND ACCESSORY WORK

1. Replace locks and latches.
2. Remove and replace grilles.
3. Remove and replace seat and shoulder belts.
4. Repair power window control units.
5. Repair or replace window raising and lowering mechanism.
6. Replace molding and hardware.

INTRODUCTION To AUTO BODY REPAIR

SPANISH VERSION

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INTRODUCCIÓN

El mecánico reparador de carrocerías de automóvil necesita saber la construcción de los automóviles y tener cierta destreza manual.

Hay mucha diversidad en los requisitos del mecánico-reparador. En el taller grande de reparaciones de carrocería, el reparador por lo general realiza un trabajo especializado. Sin embargo, en el taller más pequeño, el mecánico-reparador tendrá que llevar a cabo varias fases distintas en la compostura desde la reconstrucción completa de la carrocería hasta el enderezamiento del chasis. Así pues, el buen mecánico-reparador de las carrocerías de automóvil debe tener un entrenamiento bastante amplio aunque se especialice, y debe saber apreciar el trabajo de buena calidad, ya que cualquier defecto es altamente visible.

A causa de la naturaleza y las exigencias de este oficio, hay mucha oportunidad para el mecánico-reparador de carrocerías bien capacitado y poseído de destreza. Ya que las ganancias (el pago) depende de la destreza y la eficiencia del trabajador, al mecánico-reparador se le paga a base de una comisión y él puede gozarse de un oficio bastante bien remunerado si tiene la destreza y la motivación correspondientes.

El medioambiente del trabajo de mecánico-reparador está con frecuencia contaminado de polvo y el rocío de las pinturas y los vapores de los solventes. Por eso, la persona que sufra

de una alergía a los vapores de los solventes de las pinturas no debe admitirse a este programa de adiestramiento.

El programa de instrucción en composturas de las carrocerías de automóvil es de 40 semanas e incluye lo siguiente: el empleo de la herramienta básica en las reparaciones, el arreglo de los abolladuras y mellas (teoría y práctica), restauración de metales (teoría y práctica), repuesto de paneles; composturas con fibra de vidrio; soldadura por puntos, y alguna enseñanza básica en el enderezamiento de los chasis. La clase se reúne 2 horas al día en un programa educativo conexo (afín), o en las clases de Desenvolvimiento Educativo General (G.E.D.), e incluye además 6 horas de práctica en el taller de composturas de carrocería 5 días a la semana.

Aunque a cualquiera se le enseña la técnica de composturas sin que tenga mucha educación formal, al alumno se le anima a mejorar su comprensión mediante lecturas y manejo de la matemática.

Al completar con éxito el programa de adiestramiento en la mecánica de composturas de carrocería, el alumno quedará preparado y capacitado a hacer todo trabajo de reparaciones bajo alguna supervisión. Con 2 o 3 años de experiencia en el trabajo de taller, el alumno debe llegar a salir un maestro en el oficio de mecánico-reparador de carrocerías de automóvil.

AUTO BODY REPAIR: DUTY-TASK INDEX

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: RELACIÓN DE DEBERES Y TRABAJOS

I. CALCULOS DE COSTO

1. Preparar un cálculo estimativo de costos de composturas.

II. HOJALATERÍA Y SOLDADURA

1. Llenar las abolladuras con el material de aporte y allanar la superficie.
2. Hurgar, limar, y dar el acabado al metal.
3. Soldar chasis o las puntas del chasis.
4. Reducir las áreas deterioradas o dañadas del metal de carrocería.

III. REPINTADO DEL METAL DE CARROCERÍA

1. Aplicar los materiales corrosivos.
2. Quitar la pintura y el orín.
3. Aplicar material de revestimiento.
4. Limpiar y preparar la superficie ya recompuesta a pintarse.
5. Enmascarar secciones y piezas.
6. Pintar superficies.
7. Acabar la superficie una vez pintada. (Dar acabado a la superficie pintada.)

IV. ALINEAMIENTO DE CARROCERÍA Y CHASIS

1. Alinear el capó.
2. Quitar e instalar (montar) puertas.
3. Quitar e instalar (montar) guardabarros. (Guardalodos, salpicaderas)
4. Quitar e instalar (montar) los paneles soldadas.
5. Quitar y remontar defensas.

V. CRISTALES

1. Ajustar o alinear los cristales de las puertas.
2. Quitar cristales rotos e instalar repuestos.
3. Tapar goteras en derredor del paranrisas y cristal trasero.

AUTO BODY REPAIR: DUTY-TASK INDEX

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: RELACIÓN DE DEBERES Y TRABAJOS

VI. ENDEREZAMIENTO DEL CHASIS

1. Enderezar, hacer composturas al chasis y alinerarlo con la carrocería, con experiencia limitada en el taller.
2. Enderezar hojalata de una carrocería.

VII. COMPOSTURA MECÁNICA Y ALINEAMIENTO

1. Alinear los faros.

VIII. ADORNOS Y ACCESORIOS

1. Reponer cerrajería.
2. Desmontar y montar de nuevo la rejilla.
3. Desmontar y montar de nuevo los cinturones de seguridad.
4. Componer el aparato eléctrico para subir y bajar los cristales.
5. Reponer molduras y ferretería.

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LARRY HEPBURN, CENTER DIRECTOR

ศีลข้อ ๑.

ว่าด้วยการงดเว้นจากการฆ่าสัตว์ ตัดชีวิตสัตว์ ได้แก่ ความรู้สึกเกี่ยวกับการฆ่าสัตว์ และความพยายามในการฆ่านั้น.

ความตั้งใจของว่าด้วยการฆ่าสัตว์นั้นมีหลายหัวข้อด้วยกัน. ในการฆ่าสัตว์ด้วยวิธีต่าง ๆ ว่าด้วยการฆ่าสัตว์ด้วยวิธีการ

ฝึกเจริญสติปัฏฐานสี่ ประกอบด้วย องค์ ๕ คือ วิตก วิจาร ปีติ สุข เอกัคคตา. ท่านหมายถึง ฌานที่ ๑ ซึ่งประกอบด้วย องค์ ๕ นี้ ได้แก่ ปฐมฌาน. ฌานนี้ เป็นบาทฐานของวิปัสสนาญาณ ที่ผู้ปฏิบัติจะต้องได้ก่อน.

ฌานที่ ๑ ที่ท่านกล่าวถึงนี้ ต้องเข้าถึงให้ได้ ๔๐ นาที. ๔๐ นาทีนี้ ต้องใช้ความพยายามมาก ๓ ประการ คือ ความไม่ท้อถอย, ความเพียร (วิริยะ และ ปธานิยังคะ), ความตั้งมั่นแห่งจิตของเรื่องสติปัฏฐาน (จิตตะ และ ปธานิยังคะ), ความยับยั้งของเรื่องสติปัฏฐาน, องค์ประกอบทั้งเจ็ดของโพชฌงค์, ความเจริญปัญญา และ ความเข้าถึงสติปัฏฐานสี่ เป็นต้น. ความเจริญสมถกรรมฐานนี้ ต้องอาศัยวิตก วิจาร ประกอบด้วย ความเพียร ที่ท่านเรียกว่า เรื่องสติปัฏฐาน หรือความตั้งมั่นแห่งจิต ซึ่งเป็นอารมณ์ของสมถกรรมฐาน ที่ผู้ปฏิบัติเลือกเอาเป็นอารมณ์ ตามความสามารถของตน. จากนั้นอีก ๒ องค์ ปีติ สุข จึงจะเกิดขึ้นได้ ในขณะที่ผู้ปฏิบัติเข้าถึงฌานที่ ๑ และ ๒ องค์ต่ำ ๆ ดังกล่าว.

ผู้ที่จะเข้าถึงฌานที่ ๑ ได้ ต้องเจริญวิปัสสนาญาณ ประกอบด้วย วิตก วิจาร ความเพียร ความตั้งมั่นแห่งจิต ซึ่งเป็นอารมณ์ของสมถกรรมฐาน ที่ตนเลือกเอาเป็นอารมณ์ ตามความสามารถของตน. จากนั้นจึงจะเกิดปีติ สุข ขึ้นได้ ในขณะที่ผู้ปฏิบัติเข้าถึงฌานที่ ๑ และ ๒ ดังกล่าว. ฌานที่ ๑ และ ๒ นี้ ผู้ปฏิบัติจะต้องได้เอาไปเจริญวิปัสสนาญาณ

ตามคำเป็นข้อ ๑.

หัวข้อที่เรียงตามลำดับแล้ว บังคับจะสามารถ
และพร้อมที่จะเข้าไปเรียนต่อในระดับที่สูงขึ้นได้ทุกคน
ถ้าผู้ใดมีความประพฤติไม่ดี หรือขาดเรียนตามที่กำหนด
ไว้ต่อระดับเรียนรัฐ บังคับว่าจะต้องมีการลงโทษ
ตามสมควร (ตาม).

AUTO BODY REPAIR: DUTY-TASK INDEX

ชาวบ้าน: หน้าที่ และ: ความงามของความเสียหายเครื่องยนต์.

I. ESTIMATING ความที่ระเบิด.

1. ที่ระเบิดของความช่วยเหลือต่างๆ.

II. METALWORK AND WELDING วุฒิความต่างกับเหล็กและเชื่อม.

1. ความไม่ผิดพลาดที่เกิดความเสียหายและเป็นรู.
2. ความดึงของหุบ, ตาย และ: ฉีดพ่นระบายเหล็ก.
3. ความเชื่อมที่ลด: ของเสียหาย.
4. ความเสียที่พ่นเหล็กหัวตัว.

III. METAL REFINISHING ความฉีด และ: ขัดเสียหาย.

1. ความไม่เข้าด้วยกัน และ: ล้างพ่นเหล็ก.
2. ความเสียที่ดี และ: หยุดออกไป.
3. ความไม่ดีของฉีด.
4. ความเข้าความช่วย ของ: ความดูแลเสียหายเข้าเครื่องแล้ว.
5. ความไม่เหมือนกัน ปล่อยฉีดที่ดีดี.
6. ความฉีดดี.
7. ความขัดที่ดีหยาบ.

IV. BODY AND FRAME ALIGNMENT ความตั้งสมของเสียหายและปัญหา.

1. ที่ช่วยเครื่องจักรที่ดีหนัก.

2. ขูดออก และขัดปะติด.
3. ขูดออก และขัดปูพื้น.
4. ขูดออก และกะปิปูนขัดหยัง.
5. ขูดออก และตัดแต่ง.

V. GLASS WORK วูกแอ่มขูด.

1. การเตรียมแอ่มแอ่มกับปะกู.
2. การขูดเอาแผ่นที่แตกออกและขัดใหม่เข้าไป.
3. ขัดการะมีดป้องกันรั่วซึมรอบแอ่ม หน้า และหลัง.

VI. BASIC FRAME STRAIGHTENING การดึงโครงหยังของเรือนรถ

1. การดึงให้ตรง และซ่อมเอาเรือนรถกับคืนเหมือนเดิม.
2. การเรียงให้แน่นหนักของเรือนรถกับตะแหมือนเดิม.

VII. MECHANICAL REPAIR AND ALIGNMENT การซ่อมแปงส่วนประกอบ.
และการขัดให้เสมอ.

1. การเตรียมโครงไฟของหน้ารถ.

VIII. TRIM AND ACCESSORY WORK วูกเครื่องตกแต่งของเรือนรถ.

1. ปูนกระจกและการหมุน
2. ปูนโครงหน้ารถ.
3. ปูนหลังคาและตกแต่งข้างเรือน.
4. ซ่อมแปงบ่อนยึดเข็ดขอมประตู ฯ ลัดฝาครอบ ฯลฯ.
5. ปูนหู ซ่อมเอาแปงบ่อนหมุนเอาประตู ลม - กิ่ง.
6. ปูนเครื่องตกแต่ง และส่วนประกอบของรถ.

Technical Lexicon:

English
English/Spanish
English/Laotian

EC029195

AUTO BODY REPAIR TECHNICAL TERMS

CAREER DEVELOPMENT CENTER
SCHOOL OF TECHNICAL CAREERS
SOUTHERN ILLINOIS UNIVERSITY
CARBONDALE, ILLINOIS

AUTO BODY REPAIR TECHNICAL TERMS

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AUTO BODY REPAIR: Technical Terms

acetylene: compressed fluid which becomes gaseous when combined with acetone; a colorless gas which burns with a brilliant white light, and is used for welding metals. CAUTION: POISONOUS; FLAMMABLE.

acetylene welding torch: an attachment used for fused welding.

acid core solder: an erosive substance necessary for lead to adhere to naked metal.

align: to adjust a unit to the total structure, to assure proper fitting by bringing in line.

Allen wrench: wrench which fits inside of an Allen head bolt.

chamfer: the process of cutting and fitting metal to be welded by smoothing the surface to a slant or slope.

boxed end wrench: a wrench with an enclosed circular end.

buffing machine: a machine with a soft pad; used for polishing to obtain a high gloss finish.

bumper: a curved chrome bar attached to the frame and located at the front and rear of a car.

bumper arms: a heavy attachment on which bumper is positioned.

C-clamps: a holding device in shapes of a "C".

chrome molding (exterior): a decorative chrome on the outside of a car; sometimes used to conceal joints.

cold chisel: a metal bar with flat beveled edge; used in cutting metal.

come-along: a pulling device which makes more leverage possible.

common screwdriver: a tool with a flat plate for turning screws.

compound: a substance in paste form applied to new paint to achieve a fine finish.

crescent wrench: an adjustable hand tool for holding, twisting, or turning an object.

crossmember: a unit attached to a structure for strength.

cutting tip: a welding attachment used for cutting metal.

dash panel: an instrument panel on which several controls and gauges are located; found in an automobile between the driver and fire wall.

deck lid: a cover for the luggage compartment of a car.

diagonal cutter: a scissor-type cutter.

door glass: a transparent plate in an automobile; used for outside viewing and as a shield against outside weather.

door handle remover: a tool for taking inside door handles out.

drill bit: a sharp metal rod with auger spiral which is inserted into a drill.

drop light: a light mounted on an electrical cord.

extension: a section forming an additional length.

extension cord: a long cord making extra length possible.

feather edging: the act of tapering the edge of damaged paint.

fender: an outer panel located at the front end of a car connecting the front sheet metal; serves to deflect water and mud thrown by the front wheel.

fender inner shields: a piece of metal covering the top and inner sides of a tire which deflects mud, sand, or water.

Figure 8 screwdriver: a tool for driving screws with Figure 8 heads.

flexible spinner handle: a handle into which a flexible screwdriver blade is fitted.

floor jack: a hydraulic jack mounted on a portable base; used for lifting.

frame structure: a structure on which auto parts are installed to complete a unit.

gas tank: a container for fuel supply.

gravel deflector: a panel between the grill and the bumper.

grill panel: the structure which serves both as a tie bar for the front fender and as a beautifying element.

grinding shield: a plastic shield used to protect the eyes.

hacksaw: a fine-tooth saw with a blade under tension in a bowshaped frame for cutting metal.

hammer: a hand tool consisting of a solid heat set on a handle and used for pounding.

headlamps: the largest units of an automobile lighting system.

hinges: metal pieces used for attaching any swinging part.

hood: the panel anchored to the front of an automobile by hinges or springs; serves as a cover for the motor and as an insulator.

hydraulic: a term used to describe what is operated by the pressure transmitted when a liquid is forced through a comparatively small tube.

impact panel cutter: a machine powered by air pressure which cuts metal by the back and forth movement of a chisel blade.

installation: the act of connecting one or more units.

kansas jack: a portable pulling device for body work.

lacquer: a durable, natural, or synthetic spirit varnish.

lead paddle: a one-piece spatula-shaped wooden paddle used for spreading hot lead.

leading: a process of filling a dent with heated lead by hitting and smoothing with a wooden paddle.

AUTO BODY REPAIR: Technical Terms - (cont.)

line up punch: a tapered rod; sharp on one end, used to align holes.

masking tape: a tape used to cover the surface that is not to be painted.

mechanical fingers: a hand device used in handling objects in hard-to-reach places.

metal dolly block: a metal block; used for shaping metal with a hammer (Dolly).

mill file: a hand tool used for precision filing.

needle nose pliers: a pair of sharp pointed pliers used for work in closed-in places.

open end wrench: a wrench open on one end.

paint thinner: a solvent used to thin paint.

patch panel: a piece of metal installed to repair a portion of a damaged panel.

Phillips head screwdriver: a tool used for driving screws with crossed, slotted heads (Phillips screws).

pistol grip drill: a portable drill with an electric motor; used in drilling holes.

plastic filler (Bondo): filler made of plastic; used for repairing damaged areas to produce a smooth surface.

plastic wiper (Bondo wiper): a flat, flexible pad; used for smoothing plastic filler.

pliers: a hand tool used for gripping.

portable grinder: a movable machine used for removing excess materials by action of abrasive wheels or belts upon the material.

porter power jack: a light weight hydraulic lift which can be used in any position.

AUTO BODY REPAIR: Technical Terms - (cont.)

primer: a paint product applied to bare metal for its protection in preparation for painting.

pry bar: a metal bar used for pressing out dents in the body of an automobile.

punch: a rod-like tool with a tapered or straight shank at one end.

quarter panel: the rear section of a car; composed of the outer panel, inner panel and extensions.

radiator: the automobile cooling system for both the motor and transmission.

radiator support: the unit which holds the radiator reservoir and serves as a tie bar for the entire metal structure (core support).

ratchet: a wheel or bar with teeth that come against a catch, so the motion is permitted in one direction but not in the other.

repair: to reshape a broken or dented part to its original contour.

retarder: a solvent added to paint to prolong drying time.

rivet: a metal object, much like a bolt, which is used to fasten two pieces of metal.

rivet gun: a special device used for clinching rivets.

rocker panel: a reinforcement of the floor pan to strengthen the body: Located at each side of the bottom and serves as a step plate.

roof panel: a part of body structure covering the top of an automobile.

rubber block: a hard rubber square used for block-sanding.

rubber mallet: a rubber-tipped hammer.

rubbing compound: a substance in paste-form applied to new paint to achieve a fine finish.

sanding: a process of smoothing a surface with an abrasive using either hand or machine.

AUTO BODY REPAIR: Technical Terms - (cont.)

scratch awl: an ice pick for aligning holes.

seats: an upholstered sitting area of an automobile.

snatch bar: a pulling hammer; a slide hammer.

socket set: a wrench with circular head which fits snugly into the complete circumference of a bolt or a nut.

solder: an alloy of tin and lead used in the soldering process.

soldering iron: a heavy piece of metal heated by electricity and used to apply solder.

speed handle: a metal rod with crank handle which is attached to a socket.

spinner handle: a handle into which small sockets may be inserted.

spray gun: an adjustable apparatus for applying paint in the form of a spray.

tack-rag: a sticky cloth used for picking up lint or dust particles before applying paint.

tinsnips: a pair of shears used for cutting light metal.

tool box: a container for hand tools.

torch lighter: a flint used for igniting a torch.

trim pad remover: a tool for removing trim tacks.

trim panel: upholstery on inside of automobile door.

two-by-four: piece of lumber used to spread the impact of hammer when aligning metal.

universal joint socket adapter: that part of a socket set which allows the exertion of pressure from an angle.

vise: a tool having adjustable jaws for holding work.

vise grips: pliers with locking features.

AUTO BODY REPAIR: Technical Terms - (cont.)

vixen file: a curved tooth body file.

water-sanding: wet sanding: a process by which a surface is sanded or smoothed by use of water and sandpaper. May be done by hand or by machine.

welding goggles: a pair of glasses used for the protection of the eyes from sparks and infrared rays during welding.

windshield: a transparent plate, usually glass, extending across the front of an automobile which serves as a windbreaker and eye shield.

wire brush: a stiff brush used for removing loose rust.

AUTO BODY REPAIR: Equipment and Tools

1. air chuck: for airing tires
2. air compressor
3. air drill
4. air file: orbital or straight line
5. air hose: with quick couplings
6. air regulator: with extractors
7. air regulator: without extractors
8. Allen wrenches: set or hex wrenches
9. arbor press
10. automotive disc sanders: grinder
11. battery charger
12. body clamps: assorted
13. body-and-fender jacks: 4-ton capacity; portable/power
14. body-and-fender jacks: 10-ton capacity; portable/power
15. body files: flat and half round
16. brushes: stripping
17. brushes: wire
18. bumper chains
19. caulking gun
20. center line gauge
21. chisels: assorted
22. come-along
23. crash book
24. creepers

AUTO BODY REPAIR: Equipment and Tools (cont'd)

25. cutter, sheet metal: hand
26. cutter, sheet metal: power
27. D.A. sander: random orbital
28. disc cutter
29. dollies: assorted
30. drain pans
31. drill bits: set
32. drop lights
33. electric drill
34. extension cord
35. fender covers
36. file boards
37. files: special purpose
38. grinder: bench
39. gun: air dusting
40. hacksaw
41. hammers: body
42. hammers: machine
43. hammers: sledge
44. headlight aiming kit
45. heat gun
46. hoist: chain or pneumatic
47. hole saw
48. jacks: floor roller

AUTO BODY REPAIR: Equipment and Tools (cont'd)

49. jacks: mechanical
50. jacks: twin saddle
51. jitterbug: orbital
52. jumper cables
53. magnetic pick-up tools
54. mallet: brass
55. mallet: leather
56. mallet: plastic
57. mallet: rubber
58. masking machine
59. measuring tape
60. oiler
61. oxyacetylene welder
62. paint shaker
63. panel cutter set: air drive
64. picks: assorted
65. plastic spreaders
66. pliers: assorted
67. pliers: drip molding
68. pliers: hcg ring
69. pliers: vise grip
70. pop-rivet tool:
71. portable frame machine: pulldozer or dowage dozer
72. power polisher: buffer

AUTO BODY REPAIR: Equipment and Tools (cont'd)

73. pull clamps
74. pull straps: fender
75. punches: assorted
76. putty knife
77. respirator: paint mask
78. safety goggles
79. sanding blocks
80. scratch awl: scribe
81. screwdrivers: clutch
82. screwdrivers: phillips
83. screwdrivers: standard; blade type
84. slide hammer: snatch bar
85. socket adapters
86. socket sets: 1/4 in., 3/8 in., 1/2 in.
87. soldering kit: gun or iron
88. solder paddles: curved or flat
89. spoons: assorted
90. spot welding gun: resistance
91. spray gun: detail
92. spray gun: enamel nozzle
93. spray gun: for primer
94. spray gun: lacquer nozzle
95. stands: adjustable
96. staple gun: stapler

AUTO BODY REPAIR: Equipment and Tools (cont'd)

97. stationary frame machine: straightener
98. steel workers benches:
99. tap and die set: standard
100. tap and die set: metric
101. test light: circuit
102. tools: door handle pin removing
103. tools: door handle clip removing
104. tram gauge
105. tram rod
106. tubing flaring set
107. vise
108. vise grip clamps: assorted
109. wheel covers:
110. wrench: air drive; 1/2 in.
111. wrench: air drive; 3/8 in.
112. wrenches: box set
113. wrenches combination set: end wrenches
114. wrenches: open-end set

AUTO BODY REPAIR TECHNICAL TERMS

ENGLISH-SPANISH LEXICON

CAREER DEVELOPMENT CENTER
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AUTO BODY REPAIR TECHNICAL TERMS

ENGLISH-SPANISH LEXICON

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June 1981

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6

AUTO BODY REPAIR: Technical Terms

REPARACIÓNES DE CARROCERÍA: Terminología Técnica

acetylene: acetileno

acetylene welding torch: soplete de acetileno para soldar

acid core solder: soldadura de relleno ácido

align: alinear, enderezar

Allen wrench: llave Allen (hexagonal) (para tornillos)

chamfer: chaflanar

boxed end wrench: llave de boca de caja (boca abierta)

buffing machine: máquina pulidora

bumper: defensa (parachoques)

bumper arms: montaduras de defensa

C-clamps: mordazas en "C"

chrome molding (exterior): cromo o moldura cromada

cold chisel: cortafrío

come-along: "jalador"

common screwdriver: desatornillador, desarmador

compound: pasta para acabado fino (de la pintura)

crescent wrench: llave ajustable (tipo sueco)

crossmember: travesaño

cutting tip: boca de soplete para cortar

dash panel: tablero de instrumentos

deck lid: tapa de la cajuela

diagonal cutter: una especie de tijeras para cortar metal

door glass: el cristal de puerta

AUTO BODY REPAIR: Technical Terms

REPARACIÓNES DE CARROCERÍA: Terminología Técnica

door handle remover: el sacamanijas, el quitamanijas, el extractor de manijas

drill bit: broca

drop light: lámpara de extensión

extension: extensión

extension cord: el cable de extensión

feather edging: el acto (proceso) de (disminuir, hacer decrecer) el espeso de la pintura hasta desaparecer.

fender: el guardafangos

fender inner shields: forros interiores de los guardafangos

figure 8 screwdriver: desatornillador para tornillos con cabeza en "8"

flexible spinner handle: mango para desarmador de hoja flexible

floor jack: el gato con ruedas; el alzacoches móvil

frame structure: armadura, armazón

gas tank: el bidón de gasolina

gravel deflector: el deflector de grava

grill panel: el panel entre la reja y la defensa

grinding shield: escudo de plástico para proteger los ojos del operario del esmerilador (máquina esmeriladora)

hacksaw: sierra de arco (para cortar metales)

hammer: martillo

headlamps: faros

hinges: bizagras

hood: capó, capota

hydraulic: hidráulico

AUTO BODY REPAIR: Technical Terms

REPARACIÓNES DE CARROCERÍA: Terminología Técnica

impact panel cutter: cortador de metal (hojalata de los paneles de puerta) con una hoja-cincel de vaivén.

installation: instalación

kansas jack: una palanca para uso en las reparaciones de la carrocería

lacquer: laca

lead paddle: una espátula de madera para moldear el plomo fundido

leading: llevar una abolladura de la carrocería con plomo fundido y aplanarla

line up punch: varilla o punzón alineador con la espátula

masking tape: cinta adhesiva para proteger bordes y márgenes de los brochazos o el rociador de pintura

mechanical fingers: especie de pinzas o tenazas para

metal dolly block: especie de yunquito empleado al dar forma al metal de la carrocería con un martillo ("dolly")

mill file: lima plana

needle nose pliers: los alicates de garra larga

open end wrench: llave de boca abierta

paint thinner: tíner, diluyente para pintura

patch panel: panel-parche

phillips head screwdriver: desarmador de punta de estrella (phillips)

pistol grip drill: taladro mecánico de mango de pistola

plastic filler (Bondo): plástico para rellenar (Bondo)

plastic wiper (Bondo wiper): una especie de frotador flexible para emparejar el Bondo

pliers: alicates, tenacillas

AUTO BODY REPAIR: Technical Terms - (cont.)

REPARACIÓNES DE CARROCERÍA: Terminología Técnica

portable grinder: esmerilador portátil

porter power jack: gato ligero accionado mecánicamente

primer: el tapaporos (pintura de imprimación)

pry bar: palanca desabolladora

punch: punzón

quarter panel: panel lateral (de una carrocería de coche)

radiator: radiador

radiator support: sostenimiento del radiador

ratchet: carraca

repair: reparar, reformar

retarder: solvente retardador

rivet: remache

rivet gun: máquina de remachar, remachadora

rocker panel: estribo del coche, panel-estribo

roof panel: techo

rubber block: almohadilla de hule (caucho) para alijar

rubber mallet: mazo de hule (caucho)

rubbing compound: pasta para pulir

sanding: alijar, lijado

scratch awl: punzón de marcar, lezna para alinear

seats: asientos

snatch bar: martillo tirador

socket set: llave de cubo

solder: soldadura

AUTO BODY REPAIR: Technical Terms

REPARACIÓNES DE CARROCERÍA: Terminología Técnica

soldering iron: el cautín

speed handle: mango de berbequí

spinner handle: mango de carraca

spray gun: pistola rociadora

tack-rag: trapo pegajoso

tinsnips: tijeras de hojalatero

tool box: caja de herramientas

torch lighter: encendedor de soplete

trim pad remover: sacatachuelas

trim panel: restimiento de la puerta (interior)

two-by-four: yunque improvisado de madera (trozo de una viga)

universal joint socket adapter: el cardán adaptador para llave de cubo

vise: tornillo de banco; prensa de tornillo

vise grips: los alicates de tornillo fijador

vixen file: lima plana con picadura curva

water-sanding: alijado con agua

welding goggles: gafas de soldador

windshield: parabrisas

wire brush: cepillo de alambres

AUTO BODY REPAIR: Equipment and Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

air chuck - for air tires: boquilla de la manguera de aire para inflar llantas (gomas).

air compressor: compresor de aire

air drill: taladro impulsado por aire

air file - orbital or straight line: lima mecánica, orbital o de variación lineal (de vaivén)

air hose - with quick couplings: manguera de aire de acoplamiento rápido

air regulator - with extractors: regulador de aire con extractores

air regulator - without extractors: regulador de aire sin extractores

Allen wrenches - set or hex wrenches: llaves para tuercas de entrada hexagonal, llaves Allen

arbor press: prensa de husillo a mano

automotive disc sanders - grinder: lijadora de disco; esmeriladora de disco

battery charger: cargador de baterías o acumuladoras

body clamps - assorted: zunchos, abrazaderas, mordazas, grapas, grampas de carrocería

body-and-fender-jacks - 4-ton capacity; portable/power: gato de cuatro tonelados capacidad para uso en la compostura de chasis y guardafangos, portátil de acción mecánica

body files - flat and half round: limas planas y de media caña

brushes - stripping: cepillos de rascado

brushes - wire: cepillos de alambre

bumper chains: cadena para remolcar por las defensas (o parachoques)

caulking gun: pistola para calafateo

AUTO BODY REPAIR: Equipment and Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

center line gauge: puente para calibrar el armazón

chisels - assorted: cincel, gubia, formón, escoplo, buril, cortafrío

come-along: dispositivo para acercar dos piezas

crash book: libro de cotizaciones

creepers: tarima rodadiza

cutter, sheet metal - hand: tijera (de banco) para chapa

cutter, sheet metal - power: cizalla mecánica para chapa

D.A. sander; random orbital: lijadora orbital

disc cutter: cortadora de disco

dollies - assorted: plataformas rodantes; yunquetas

drain pans: recipiente para aceite, agua, etc., de drenado

drill bits - set: juego de brocas

drop lights: luz de extensión

electric drill: taladro mecánico (eléctrico)

extension cord: cable de extensión

fender covers: tapaguardafangos

file boards: tablas-limas

files - special purpose: limas especiales

grinder - bench: esmerilador de banco

gun - air dusting: pistola de aire

hacksaw: sierra de arco para metal

hammers - body: martillos de hojalatero

hammers - machine: martillos de mecánicos

AUTO BODY REPAIR: Equipment and Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

hammers - sledge: martillo de dos manos, macho de fragua

headlight aiming kit: alineador de faros

heat gun: pistola de aire caliente

hoist - chain or pneumatic: montacargas de cadena, torno de aire comprimido

hole saw: broca hueca cilíndrica con borde cortante

jacks - floor roller: gato con ruedas; el alzacoches móvil

jacks - mechanical: gatos mecánicos

jacks - twin saddle: gatos de dos alzadores

jitterbug - orbital: bumper jack

jumper cables: cables de puente

magnetic pick-up tools: recogedor imantado

mallet - brass: mazo de latón

mallet - leather: mazo de cuero

mallet - plastic: mazo de plástico (de resina sintética)

mallet - rubber: mazo de goma (caucho, hule)

masking machine: máquina de enmascaramiento

measuring tape: cinta de medir

oiler: aceitera

oxyacetylene welder: soldador oxiacetilénico

paint shaker: agitador de pintura

panel cutter set - air drive: cortador de panel impulsado por aire comprimido

picks - assorted: picos, bicornios, martillo picador

AUTO BODY REPAIR: Equipment and Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

plastic spreaders: extendedor de plástico

pliers - assorted: alicates, varios, pinzas

pliers - drip molding: alicates para moldura escurridora o vierteaguas

pliers - hog ring: alicates para colocar los anillos de retención de la vestiduría de asientos

pliers - vise grip: alicates de agarre de tornillo

pop-rivet tool: alicates para remache tubular

portable frame machine - pulldozer or dowage dozer: máquina portátil para enderezar el armazón

power polisher - buffer: esmerilador o pulidor mecánico

pull clamps: prensa-tenazas para jalar o formar hojalatería

pull straps - fender: correas de nailon para enderezar guarda-fangos

punches - assorted: punzones, surtido

putty knife: espátula para enmasillar

respirator - paint mask: respirador para usar al pintar con rociadora

safety goggles: gafas de seguridad, anteojos de seguridad

sanding blocks: almohadillas para lijar

scratch awl - scribe: punta de trazar

screwdrivers - clutch: desarmador para usar en el embrague

screwdrivers - phillips: desarmador phillips (de cruz)

screwdrivers - standard; blade type: desarmador ordinario, común, o corriente

slide hammer - snatch bar: desatornillador-martillo de pistón

socket adapters: adaptadores de llaves de cubo

AUTO BODY REPAIR: Equipment anu Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

socket sets - 1/4 in., 3/8 in., 1/2 in.: juegos de llaves de cubo con carraca de 1/4, 3/8, y 1/2 pulgada

soldering kit- gun or iron: juego para soldar, de cautín o de pistola

solder paddles - curved or flat: espátulas para soldadura curvadas o planas

spoons - assorted: afoladores, surtidos

spot welding gun - resistance: pistola de soldar por puntos

spray gun - detail: rociador de pintura; pistola rociadora para detalles

spray gun - enamel nozzle: pistola rociadora con boquilla para pintar al esmalte

spray gun - for primer: pistola rociadora con boquilla para pintura de imprimación

spray gun - lacquer nozzle: pistola rociadora con boquilla para pintar a la laca

stands - ajustable: estantes ajustables

staple gun - stapler: engrapador, pistola engrapadora

stationary frame machine - straightener: puente estacionario para enderezar armazones

steel workers benches: bancos de acero para operarios

tap and die set - standard: juego de machos y hembras para roscar-ingleses

tap and die set - metric: juego de machos y hembras para roscar-métricos

test light - circuit: probador de circuitos

tools - door handle pin removing: punzones o útiles para sacar chavetas de la manija de la puerta

tools - door handle clip removing: punzones o útiles para sacar abrazaderas de la manija

AUTO BODY REPAIR: Equipment and Tools

COMPOSTURAS DE CARROCERÍA DE AUTOMÓVIL: Equipo y Herramientas

tram gauge: galga-dispositivo de varas ajustables empleada para la medición comparada de piezas averiadas y sin averiar

tram rod: vara movible que forma parte del dispositivo ya mencionado

tubing flaring set: juego de abocinadores de tubería

vise: tornillo-prensa

vise grip clamps - assorted: tornillos o mordazas de agarre fijo

wheel covers: tapa ruedas

wrench - air drive; 1/2 in.: llave mecánica de 1/2 pulgada

wrench - air drive; 3/8 in.: llave mecánica de 3/8 de pulgada

wrenches - box set: juego de llaves en estuche

wrenches combination set - end wrenches: juego de llaves de varios tipos

wrenches - open-end set: llaves de boca abierta (juego)

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AUTO BODY REPAIR: Technical Terms

acetylene: ອ:ເຊ ທ ລີນ ເຮັ ມ ຂອ ງ ເຮ ຼ ວ ທ ີ ່ ໃ ຊ ້ ຫ ມ ຸ ນ ເ ວ ຽ ນ ເ ຮ ັ ດ ວ ຽ ກ ເ ວ ລ າ ມ ີ ໄ ຟ
Acetone (ເ ຊ ອ ເ ຕ ນ) ຄ : ກ າ ຍ ເ ປ ັ ນ ກ າ ສ ທ ີ ່ ນ ໍ າ ໃ ຊ ້ ເ ຊ ື ່ ອ ມ ຕ ິ ດ ຫ : ທ ່ າ ງ ໆ .
acetylene welding torch: ທ ີ ່ ຈ ັ ບ ນ ໍ າ ໃ ຊ ້ ເ ຊ ື ່ ອ ມ ຕ ິ ດ ທ ີ ່ ທ ່ າ ງ ໆ ລ ວ ມ ທ ັ ງ ກ າ ນ ປ ັ ບ
ຄ ວ າ ມ ຮ ້ ອ ນ ຂ ອ ງ ແ ປ ວ ໄ ຟ .
acid core solder: ນ ໍ ້ າ ຢ າ ທ ີ ່ ມ ີ ນ ໍ ້ າ ທ ົ ດ ປ : ທ ັ ນ ໄ ດ ້ ນ ໍ າ ໃ ຊ ້ ເ ຊ ື ່ ອ ມ ຕ ິ ດ ຫ : ຫ ີ ນ ຫ : ອ າ ດ

align: ຫ ົ ດ ທ ັ ງ ຫ ມ ົ ດ ໃ ຫ ້ ເ ຮ ັ ດ ຫ ີ ນ ເ ຮ ້ ອ ມ ຣ ົ ດ ຈ ວ ຍ ງ າ ມ .

Allen wrench: ກ : ເ ຄ ຈ : ນ ິ ດ ທ ີ ່ ໃ ຊ ້ ນ ັ ງ ຫ ມ ຸ ນ ຂ ອ ງ ນ ็ อ ต ຢ ູ ່ ເ ວ ລ າ ນ ັ ນ ເ ຮ ີ ່ ມ ແ ລ :
ອ ອ ກ .
chamfer: ວ ິ ທ ີ ຕ ັ ດ ມ ຸ ມ ຂ ອ ງ ຫ ິ ນ ຫ : ທ ່ າ ງ ໆ ຫ ິ ນ ປ : ເ ຜ ່ : ຂ ອ ບ ທ ີ ່ ຄ ົ ມ ເ ຮ ັ ດ
ຄ ົ ມ ຫ ີ ນ ຫ ັ ກ .
boxed end wrench: ກ : ເ ຄ ຈ ນ ็ อ ต ທ ີ ່ ໃ ຊ ້ ນ ັ ງ ເ ຫ ັ ກ ຫ ົ ວ ນ ็ อ ต .

buffing machine: ເ ຄ ື ່ ອ ງ ມ ື ອ ຄ ັ ນ ສ ົ ນ ຂ ອ ງ ເ ຄ ື ່ ອ ງ ເ ຮ ັ ດ ຫ ິ ນ ໄ ດ ້ ເ ຮ ັ ດ ເ ຮ ັ ດ ເ ປ ັ ນ
ອ ່ ອ ນ ໆ ບ ่ อ ม ທ ີ ່ ມ ັ ດ .
bumper: ກ ັ ນ ຊ ົ ນ .

bumper arms: ບ ่ อ ม ຈ ັ ບ ກ ັ ນ ຊ ົ ນ ຫ ີ ນ ຫ ້ ອ ຍ ລ ົ ດ .

C-clamps: ເ ຫ ັ ກ ຈ ັ ບ ທ ີ ่ ม ี ร ูป ร ่ า ง เ ห ม ื อ น ต ัว C "ซี"

chrome molding (exterior): ຕ ົ ວ ກ ັ ບ ເ ຮ ັ ດ ຈ າ ກ ແ ຂ ັ ນ ທ ີ ່ ນ ຸ ່ ມ ອ ົ ດ ທ ົ ນ ທ ານ ສ ູ ງ
ໄ ດ ້ ກ ັ ບ ຫ ນ ້ າ ປ ະ ຕ ູ ລ ົ ດ .
cold chisel: ເ ຫ ັ ກ ເ ປ ັ ນ ເ ຄ ື ່ ອ ງ ຕ ັ ດ ມ ຄ ົ ມ ປ າ ຍ ເ ປ ັ ນ ແ ຜ ່ : ບ ั ม ไ ด ้ ຫ ີ ນ ຫ :

come-along: ເ ຄ ື ່ ອ ງ ທ ົ ນ ທ ີ ່ ເ ຮ ັ ດ ໃ ຫ ້ ນ ໍ ້ າ ປ : ທ ະ ຍ ອ ຍ ລ ົ ດ ເ ຂ ົ ້ າ ທ ີ .

common screwdriver: ຫ ิ ว ควง ธ ำ ม : ດ າ .

compound: ນ ่ อ ม ປ : ທ ั ນ ທ ີ ່ ເ ປ ັ ນ ເ ຄ ື ່ ອ ง ไ ด ้ ນ ำ ໃ ຊ ้ ຈ ັ ດ ຫ ີ ນ ໃ ຫ ้ ເ ປ ັ ນ ຜ ົ ง .

AUTO BODY REPAIR: Technical Terms - (cont,)

crescent wrench: ภาษาลาว คือ.

crossmember: ชิ้นส่วนหลักที่ล่วยค้ำ ไว้ ด้านล่าง ของ ตัวรถ ยาว.

cutting tip: ส่วนปากของ คีม ที่ใช้ ตัด เหล็ก.

dash panel: หน้าปัดของรถ.

deck lid: ฝาปิดของที่ ท้าย ภาษาลาว คือ.

diagonal cutter: คีมปากคม สำเลียตัดสายลวด.

door glass: กระจกหน้าต่าง.

door handle remover: เครื่องมือที่ ใช้ หมุน ภาษา (กระจก) ขึ้น ลง ได้ ออก.

drill bit: ดอกสว่าน.

drop light: ไฟส่องที่ ใช้ สำเลีย กลาง ทาง รถ ที่ บอก ชื่อ.

extension: ก้าน ต่อ ของ เครื่องมือ ยาวขึ้น.

extension cord: สายต่อ ให้ สายไฟ ฟ้า ยาวขึ้น.

feather edging: การ ทำ ให้ ขอบ ของ สี ที่ ทา กระ: ใหม่ ให้ เรียบ เป็น เหมือนว่า เนื้อ เดิม ของ.

fender: บังโคลน.

fender inner shields: ส่วน ที่ อยู่ ข้าง ใน บังโคลน เพื่อ กัน น้ำ, โคลน.

figure 8 screwdriver: ไขควง: มือ ที่ ใช้ กับ มือ ตัว ผู้ มี หัว เหมือน เลข 8.

flexible spinner handle: บอก เรียก อีก อย่าง ไขควง: มือ ต่าง ที่ ใช้.

AUTO BODY REPAIR: Technical Terms - (cont.)

floor jack: เครื่องยกรถจากพื้น สำหรับเครื่องไฟฟ้ามาทางพื้นรถได้.

frame structure: เรือนรถ.

gas tank: ถังน้ำมัน.

gravel deflector: บ่อนกันก้อนหินขีดพื้นถัง.

grill panel: ฉากหน้าของรถยนต์.

grinding shield: เครื่องพลาสติกกันสะเก็ดปัดกันตา.

hacksaw: เลื่อยตัดเหล็ก.

hammer: ค้อนตี.

headlamps: ไฟหน้าของรถ

hinges: บานพับของประตูรถ.

hood: ฝาปิดเครื่องยนต์.

hydraulic: เป็นคำที่ใช้กับเครื่องร่อนเครื่องที่ใช้ระบบน้ำมันเป็นเครื่องดัน.

impact panel cutter: เครื่องตัดเครื่องเหล็ก ด้านข้างทางหน้าของเรือนรถ.

installation: ตามติดตั้ง.

kansas jack: เครื่องยกสำหรับที่เครื่องไฟฟ้ามาได้.

lacquer: น้ำยาประสมกับสี.

lead paddle: เครื่องมือที่มีรูปร่างที่จะใช้เรื่องกินหรือก้อนกรวด.

AUTO BODY REPAIR: Technical Terms - (cont.)

leading: ภาษาไทย: ที่วางเครื่องมือ เพื่อให้เครื่องมือสามารถ

line up punch: ชื่อ: ตัดเหล็กที่ใช้ปากกระดาษ ใช้สำหรับเจาะรูเล็กๆ

masking tape: เทปที่เป็นสีน้ำตาลที่ทางอยู่ข้างหนึ่ง ใช้สำหรับปิดส่วนที่ไม่ต้องการให้ถูกสีก่อนทาสีใหม่.

mechanical fingers: เครื่องมือใช้สำหรับหยิบของ... ที่มีสามนิ้วเป็นเหล็ก.

metal dolly block: เหล็กหนุนด้านหลัง ใช้ทางกระทำ ตีถ่วงดุล.

mill file: ชื่อ: มีดสำหรับ.

needle nose pliers: คีมปากแหลม

open end wrench: ชื่อ: ประแจที่ใช้ขันน็อตสามด้านปากตาย

paint thinner: น้ำยาเจือจางสี.

patch panel: กระดานเหล็กใช้ตามเครื่องยนต์.

phillips head screwdriver: ไขควงหัวจุ๋ม.

pistol grip drill: ชื่อ: อ่านมือใช้ถือไขลาน.

plastic filler (Bondo): พลาสติกที่ใช้ตีนเนียน ใช้ทางกระบวนการซ่อมรถที่หุบรุ่ม เพื่อรักษาด้านนอกของเครื่องยนต์ถูกต้องก่อนสีใหม่.
plastic wiper (Bondo wiper): กระดานพลาสติกใช้สำหรับทาของPlastic Filler ที่ลูบ
pliers: คีมสำหรับจับเหล็ก.

portable grinder: เครื่องมือที่เครื่องมือใช้.

porter power jack: เครื่องมือที่ใช้ยกของ: ใช้ยกช่วงล่างที่ใช้.

AUTO BODY REPAIR; Technical Terms - (cont.)

primer: ສ້ ວ ພົ ທ ບ ຈ: ພົ ສ.

pry bar: ທ ຫ ໄ ສ: ລ ທ ຈ ຫ ອ ຈຸ ຫ ບ ອ ທ.

punch: ສ: ທ ຫ ພ ທ ພ ຍ ຈ ຫ ງ.

quarter panel: ປ ງ ຄ ທ ຫ ລ ວ ຣ ຄ.

radiator: ໜ ພ: ວ ຣ ຄ.

radiator support: ອ ລ ຈ ໜ ພ: ຣ ຄ ຫ ຢ ທ ປ.

ratchet: ກ ຫ ລ ວ ຈ ຫ ປ ສ ງ ທ ຫ ວ ລ ລ ປ ຈ: ທ ປ.

repair: ຈ ລ: ຫ ຈ ປ ງ ຈ ອ ລ ຣ ຄ.

retarder: ພ: ຢ: ຈ: ພ ສ ຈຸ ນ ທ ຫ ຈ ຄ ຫ ສ ຈ ຫ ງ ລ ງ.

rivet: ຢ: ໝ ຄ.

rivet gun: ປ ພ ສ: ລ ຢ: ໝ ຄ.

rocker panel: ຮ ວ ລ ລ ວ ຈ ... ຣ ຄ ຫ ປ: ທ ເ: ອ ທ.

roof panel: ຫ ງ ລ.

rubber block: ກ ອ ລ ຍ ງ ຈ ລ ທ ຫ ນ ງ ໄ ສ ທ: ລ ລ ວ ລ ຈ ຄ ຈ ຈ ອ ລ ຣ ຄ.

rubber mallet: ຄ ອ ລ ຫ ຈຸ ນ ທ ຫ ວ ຈ ລ ຍ ງ.

rubbing compound: ພ: ຢ ລ ຈ ໜ ວ ໄ ສ ປ ຫ ຫ ຈ ລ ງ.

sanding: ປ ລ ຫ ປ ຄ ອ ຍ ທ: ລ ລ ວ

scratch awl: ເຫຼັກເຈ່ຶງຢ່າຍເຈຫຼມ ໃຊ້ສໍາລັບເຮັດຮູນ້ຳ ຫນັ.

seats: ບ່ອນນັ່ງ ໜັ່ງຕິມຣົດ.

snatch bar: ເຄ້ືອງ ຕ້ຶ ເຊົ່ອ ປຸ່ມ ອອກ.

socket set: ຊຸດເຄ້ືອງ ມ້ ຊ: ມ໊ ສວມ ຫົວ ນ໊ ອ ໃ ດ້.

solder: ເຫຼັກ ເ ຊ ື ອ ມ ຫ ຸ ດ ວ ຍ.

soldering iron: ເຄ້ືອງ ຈ ອ ດ.

speed handle: ເຄ້ືອງ ໝຸນ ນ ໊ ອ ດ ເ ຮ ົ ້ າ ອອກ ຕ ິ ຫ ້ ໄ ວ ນ ໊ ນ.

spinner handle: ບ່ອນ ຈ ັ ບ ຊ: ມ ໊ ດ ຫ ັ ກ: ເ ດ ຈ ກ: ບ ອ ກ ນ ັ ່ ງ ຕ ິ ້ ໃ ດ ້.

spray gun: ປ ື ນ ພ ົ ່ ນ ສ ້ ຊ: ມ ໊ ດ ປ ັ ບ ໃ ດ ້.

tack-rag: ຜ ້ າ ທ ີ ່ ໃ ຊ ້ ເ ຊ ັ ດ ປ ຸ ່ ມ ອ ອ ກ ກ ່ ອ ນ ຈ: ພ ົ ່ ນ ສ ີ.

tinsnips: ມ ີ ດ ຕ ັ ດ ຕ ັ ດ ເ ຈ ່ ຶ ງ ມ ເ ຫ ຼ ັ ກ.

tool box: ກ ັ ບ ເ ຫ ຼ ັ ກ ສ ໍ າ ລ ັ ບ ຖ ື ເ ຄ ້ ື ອ ງ.

torch lighter: ເຄ້ືອງ ຈ ຸ ດ ໄ ຟ ຕ ິ ຫ ້ ກ ັ ບ ເ ຄ ້ ື ອ ງ ເ ຊ ື ອ ມ ຕ ິ ດ ຫ:

trim pad remover: ເ ຄ ້ ື ອ ງ ມ ື ສ ໍ າ ລ ັ ບ ເ ອ ົ ່ າ ທ ີ ່ ຕ ິ ດ ປ ຸ ່ ມ ກ ັ ບ ຣ ົ ດ ອ ອ ກ.

trim panel: ສ ່ ວ ມ ຕ ່ າ ງ ໆ ທ ີ ່ ຢ ູ ່ ແ ຜ ່ ນ ເ ຫ ຼ ັ ກ ປ ອ ຍ ຫ ົ ວ ຣ ົ ດ ນ ັ ່ ງ ຕ ິ ມ.

two-by-four: ໄ ມ ້ ເ ປ ັ ນ ທ ່ ອ ນ ທ ີ ່ ໜ ຸ ່ ມ ໃ ຊ ້ ກ ັ ບ ຄ ອ ນ ຕ ີ.

universal joint socket adapter: ນ ໍ ້ ຳ ໜ ່ ວ ງ ກ: ເ ດ ຈ ກ: ບ ອ ກ ຊ: ມ ໊ ດ ທ ີ ່ ຢ ູ ່ ໄ ປ ມ າ ໄ ດ ້ ຫ ຼ າ ຍ ທ ິ ດ ທ າ ງ.

AUTO BODY REPAIR: Technical Terms - (cont.)

vise: ເຫຼັກຄາບເຊື່ອ ເຄື່ອງຈັບເຫຼັກຫີ ຢູ່ກັບປ.

vise grips: ຄີມ ຈ: ມື ຈັບ ເຫຼັກຫີ ເຮເຫັມ.

vixen file: ຕ: ຫີ ຍ ຈ: ມື ຈ ເປັນ ຫ ຫັ.

water-sanding: ຫຼ ຂັ ຫ: ຕາມ ຈາ ຍ ຫ ຍ ໄ ຫຼ ມ້ ຳ ຫ ຍ ຫ: ຕາ ມ ຈາ ຍ.

welding goggles: ເ ເ ວ ່ ຍ ຕ ຈ ຳ ຈ ຍ ປ ັ ງ ກ ັ ບ ຕ ຈ ເ ວ ລ ຈ ເ ຊ ື ອ ມ ເ ຫ ຼ ັ ກ.

windshield: ໜ ້ ຳ ປ ັ ດ ຈ ອ ງ ຣ ດ .

wire brush: ເ ເ ປ ງ ຫ: ມ ື ຈ ໃ ຫ ້ ເ ຫ ັ ມ ເ ປ ັ ນ ລ ວ ດ ຈ ຳ ຈ ຍ ຈ ັ ດ ຫ ້ ໜ ັ ງ .

AUTO BODY REPAIR: Equipment and Tools

1. air chuck: for air tires ป่องต้มลม ส่วยเล้ากับสายยาง ปั๊มต้มขึ้นลม.
2. air compressor: ปั๊มลม ไว้กับเครื่องมือต่างๆ มีไว้ลมเป็นแรงดัน.
3. air drill: สว่าน ต่างมีไว้ลมเป็นตัวแรง.
4. air file: orbital or straight line เครื่องฉีม เพื่อมกับตะไบไว้ทำลังลม.
5. air hose: with quick couplings สายต่อ ลม ตามขึ้นลม.
6. air regulator: with extractors เครื่องตั้งความดันลมมีเกจ.
7. air regulator: without extractors เครื่องตั้งความดันลมธรรมดา ยังดูง่าย.
8. Allen wrenches: set or hex wrenches ท: ๖๑๖ ต่าง: มีด หัว หักหมู่ม.
9. arbor press: เครื่องกดโดยไว้ทำลัง หมุน.
10. automotive disc sanders: grinder เครื่องฉีมขึ้นหัวมัน (จาม) ลูย.
11. battery charger: เครื่องอัดหม้ไฟ.
12. body clamps: assorted ป่องจับเรียบร้อย.
13. body-and-fender jacks: 4-ton capacity; portable/power เครื่องยู่หี่ดี่ ต่าง: มีด 4 ตัน.
14. body-and-fender jacks: 10-ton capacity; portable/power เครื่องยู่หี่ดี่ ต่าง: มีด 10 ตัน.
15. body files: flat and half round ท: ตะไบหูเรียบรัด ต่าง มีดต่างๆ.
16. brushes: stripping ๖๑๖ปัดสีลับมูดสี.

AUTO BODY REPAIR: Equipment and Tools - (cont.)

17. brushes: wire ຟອງ ຮຫັກ (ຮເຫຼ່ ຮຫັກ).

18. bumper chains: ສາຍໂສ້ ສໍາລັບ ກັນ ຊົນ.

19. caulking gun: ປືນ ຈີດ ສໍາລັບ ການ ຢາ ຮອຍ ຮົ ກັນ ຮົ່ວ.

20. center line gauge: ເຄື່ອງ ວັດ.

21. chisels: assorted ສ: ກົ ສ: ມີດ ຕ່າງ ໆ.

22. come-along: ເຄື່ອງ ດຶງ ສ: ມ ເຄື່ອງ ຫ້ ໄ.

23. crash book: ໜັງ ສ ກ່ ກັບ ອຸ ປ: ຕິ ເຫ ອ.

24. creepers: ບ່ ອນ ສໍາ ລັ ມ ອນ ກ ຮົ.

25. cutter, sheet metal: hand ມ ຕັ ຕັ ເຮ ມ ຮ ຫັ (ໃ ຄ ປ)

26. cutter, sheet metal: power ມ ຕັ ຕ ເຮ ມ ຮ ຫັ (ຈ ທ ໃ ໄ ຟ ຮ ລ ມ ດ).

27. D.A. sander: random orbital ເຄື່ອງ ລ ສ: ມ ໃ ເ ຈ ລ.

28. disc cutter: ເ ມ ຫ ກ ໃ ຕ ເ ມ ຮ ຫັ.

29. dollies: assorted ໝ ໝ ໃ ຈ ຕ ກ ພ ຈ ເ ຫ ຫັ.

30. drain pans: ບ່ ອນ ຈ (ຖ) ມ ໄ ຈ ເ ຈ ຮ ຮ ຕ.

31. drill bits: set ສ: ດ ເ ຊ ຊ ຊ.

32. drop lights: ໄ ຈ ໃ ດ ຈ ບ ອ ຫ ໄ ຫ ມ ຕ ເ ໃ ບ ຈ.

33. electric drill: ສ: ດ ໄ ຈ.

AUTO BODY REPAIR: Equipment and Tools - (cont.)

34. extension cord: สายต่อไฟฟ้าออก.

35. fender covers: ผ้าคลุมยางหุ้มรถกันรอยขีดข่วน.

36. file boards: บ่อมไว้ตะไบ

37. files: special purpose ตะไบชุดพิเศษ.

38. grinder: bench เครื่องมือยู่กับบ่อมสำหรับขัดตะไบ

39. gun: air dusting ปืนเป่าลมฝุ่นผง

40. hacksaw: เลื่อยตัดเหล็ก.

41. hammers: body ไม้ตอก ไว้ตีเหล็ก (สำหรับดัดแปลงรถ)

42. hammers: machine ไม้ตอก ไว้ตีเหล็ก.

43. hammers: sledge ไม้ตอก ชุดมือจับ.

44. headlight aiming kit: ชุดตั้งระยะไฟหน้าหมาของรถ.

45. heat gun: ปืนเป่าลมร้อน.

46. hoist: chain or pneumatic บ่อมยกเครื่องใช้จากเบาไว้ทยิ้ดดี.

47. hole saw: เลื่อยตัดรูกลมๆ.

48. jacks: floor roller ตีมยกรถ ชุดมือเลื่อนไปมาล่มเตี้ย.

49. jacks: mechanical ตีมยกรถ ใช้ขับไฟระบบไว้ทำเป็นเครื่องมือ

50. jacks: twin saddle ตีมยกรถขี่สองข้าง.

AUTO BODY REPAIR: Equipment and Tools - (cont.)

51. jitterbug: orbital

52. jumper cables:

53. magnetic pick-up tools:

54. mallet: brass

55. mallet: leather

56. mallet: plastic

57. mallet: rubber

58. masking machine: (Masking Tape)

59. measuring tape:

60. oiler:

61. oxyacetylene welder:

62. paint shaker:

63. panel cutter set: air drive

64. picks: assorted

65. plastic spreaders:

66. pliers: assorted

67. pliers: drip molding

AUTO BODY REPAIR; Equipment and Tools - (cont,)

68. pliers: hog ring คีมปากหวัง.

69. pliers: vise grip คีมจุ:มีดจับกับเหล็ก เพื่อช่วยในการยึดไว้.

70. pop-rivet tool: เครื่องยิง หมุด.

71. portable frame machine: pulldozer or dowage dozer เครื่องมือสำหรับดึงตัวรถที่จุ:มีอะไรผิดปกติ.

72. power polisher: buffer เครื่องมือที่ใช้ในการขัดมุมจุ:มีดีหน่อย. สำหรับงานที่มีรูปร่างที่หวัง.

73. pull clamps: เครื่องมือดึง จุ:มีดจับต่อเครื่องเหล็ก.

74. pull straps: fender เครื่องมือที่ใช้ดึงจุ:มีดเป็นรอยบุบ

75. punches: assorted ชนิดจุ:มีดต่างๆ.

76. putty knife: เครื่องมือไว้สำหรับทาสี.

77. respirator: paint mask ใช้หายใจกันฝุ่นทาสีกันฝุ่น.

78. safety goggles: แว่นตาป้องกันตา.

79. sanding blocks: ไม้ขัดที่มีกระดาษทรายติดอยู่ แล:ใช้ในการขัดกระดาษ

80. scratch awl: scribe เหล็กเป็นแหลมใช้ขูดรา: หุ้มขัด แคบ.

81. screwdrivers: clutch ไขควงจุ:มีดเล็กมีหัวเป็นรูป 8 ใช้กับเครื่อง G.H.

82. screwdrivers: phillips ไขควงหัวกากบาท.

83. screwdrivers: standard; blade type ไขควงธรรมดา.

84. slide hammer: snatch bar คล้ายจุ:มีดที่ออกแบบมาใช้ในการหมายถึง.

AUTO BODY REPAIR: Equipment and Tools - (cont.)

101. test light: circuit ชุดไฟ สำหรับหาตอยู่ของไฟฟ้า.

102. tools: door handle pin removing เครื่องมือสำหรับถอดหมุดของมือจับประตู ที่มีลักษณะต่างๆ.

103. tools: door handle clip removing เครื่องมือสำหรับหมุดของเพื่อถอดของประตูออก.

104. tram gauge: เครื่องมือวัดรูของรอยต่อของตัวถัง.

105. tram rod: ไม้วัดของตัวถัง ของตัวถัง.

106. tubing flaring set: ชุดขยายปากท่อ.

107. vise: ชุดคีบ (หนีบคีบ).

108. vise grip clamps: assorted คีมจับหนีบรูปต่างๆ.

109. wheel covers: ฝาครอบล้อ

110. wrench: air drive; 1/2 in. เครื่องมือรูปตัวยาวรูปหกเหลี่ยม 1/2 นิ้ว ใช้กับลมได้.

111. wrench: air drive; 3/8 in. เครื่องมือรูปตัวยาวรูปหกเหลี่ยม 3/8 นิ้ว ใช้กับลมได้.

112. wrenches: box set ตัวประแจชุดรูปหกเหลี่ยม.

113. wrenches combination set: end wrenches ชุดตัวประแจรูปหกเหลี่ยมชนิดปากตายและปากแหวนได้ ชนิดปากตายมีขนาดต่างกัน

114. wrenches: open-end set ชุดตัวประแจรูปหกเหลี่ยมชนิดปากตายต่างขนาดกัน.